

*Serial No. 10/620,910**Docket No. 200208821-1***REMARKS****I. PRELIMINARY REMARKS**

Claims 1, 14 and 19 have been amended. No claims have been added or canceled. Claims 1-19, 21-23 and 43 remain in the application. Claims 3, 4 and 17 have been withdrawn from consideration. Reexamination and reconsideration of the application, as amended, are respectfully requested.

II. CLAIM INTERPRETATION ISSUE ASSOCIATED WITH CLAIM 19

The Office Action indicated that independent claim 19 has not been interpreted as invoking 35 U.S.C. § 112, sixth paragraph. The Examiner's claim interpretation is hereby traversed. Reconsideration thereof is respectfully requested.

Independent claim 19 calls for a combination of elements comprising "a housing having an outer region, an inner region defining a perimeter and exhaust port connected to the inner region" and "means for converting reactants into electricity and byproducts and directing the reactants and byproducts from the outer region to the inner region, and at least once around the perimeter of the inner region, as the reactants are being converted into electricity and byproducts such that all of the byproducts and any unused reactants that exit the fuel cell assembly exit by way of the inner region."

The outstanding Office Action indicated that claim 19 does not invoke 35 U.S.C. § 112, sixth paragraph, because "the 'means for' language has been sufficiently modified with structural limitations, i.e. 'from the outer region to the inner region and at least once around the perimeter of the inner region.'" [Office Action at page 3.] The Office Action also indicated that the phrase "such that all of the byproducts, and any unused reactants that exit the fuel cell assembly exit by way of the inner region" is a structural limitation that prevents the invocation of 35 U.S.C. § 112, sixth paragraph. [Office Action at pages 3 and 4.] The decisions of the United States Court of Appeals for the Federal Circuit ("the Federal Circuit") in this area make it abundantly clear that the Office Action is incorrect in both instances.

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With respect to the recitation of the inner and outer regions of the previously recited housing in the means-plus-function element in claim 19, the Federal Circuit has indicated on numerous occasions that reciting the location at which a function occurs (as opposed to the structure for performing the function) in a means-plus-function element is permissible under 35 U.S.C. § 112, sixth paragraph. For example, in *Wenger Manufacturing Inc. v. Coating Machinery Systems Inc.*, 57 USPQ2d 1679 (Fed. Cir. 2001), a claim at issue recited "a dryer housing," "an elongated reel presenting a longitudinal axis and having an inlet, an outlet, and a sidewall defining an interior ..." and "air circulating means associated with said dryer housing for circulating air through said reel ..." 57 USPQ2d at 1681. The Federal Circuit held that the "air circulating means" invoked 35 U.S.C. § 112, sixth paragraph, because the claim "uses the word 'means' ... and recites the corresponding function of 'circulating air through said reel,' **without reciting any structure for performing that function.**" 57 USPQ2d at 1684, emphasis added. The means-plus-function element in claim 19, which refers to various regions of the previously recited housing, presents an almost identical situation.

Additionally, to the extent that the Office Action has taken the position that the "such that" portion of the functional recitation in the claim 19 means-plus-function element is somehow structural and/or can be read out of the claim, the Examiner's attention is respectfully directed to *B. Braun Medical Inc. v. Abbott Laboratories*, 43 USPQ2d 1896 (Fed. Cir. 1997). Here, a claim at issue included "a first body element ...," "a second body element ...," "a resilient disc," "first means" and "means with the other body element for holding said disc firmly against said first means in such a manner that said disc is restrained from sideways movement." 43 USPQ2d at 1898. The Federal Circuit stated that the "means ... for holding said disc" should be interpreted under 35 U.S.C. § 112, sixth paragraph, because "it does not recite definite structure in support of its function" and also clearly indicated that the "in such a manner that" language is part of the function. 43 USPQ2d at 1899-1900.

Accordingly, and as previously indicated by applicant, claim 19 invokes 35 U.S.C. § 112, sixth paragraph, because it does not recite any structure whatsoever **for performing the claimed function.** To the contrary, the only structure referred to in the mean-plus-function element are aspects of the housing that are used to define the

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direction and manner of reactant travel caused by the claimed means. The claim interpretation used to evaluate claim 19 is, therefore, improper.

Finally, *in order to clarify the issues for appeal*, applicant hereby requests that next Office Action cite and discuss a Federal Circuit decision that (1) is actually on point, i.e. actually deals with the issue of a means-plus-function element which describes the claimed function in the context of a previously recited structural element, and (2) provides support for the positions taken in the Office Action.

III. PRIOR ART REJECTION OF CLAIMS 1, 2, 5-13, 19, 21-23 AND 43

A. The Rejections

Claims 1, 2, 5-7, 9, 12, 19, 22 and 43 have been rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 6,063,517 to Montemayor et al. ("the Montemayor '517 patent"). Claims 8, 11, 13 and 23 have been rejected under 35 U.S.C. § 103 as being unpatentable over the Montemayor '517 patent. Claims 10 and 21 have been rejected under 35 U.S.C. § 103 as being unpatentable over the combined teachings of the Montemayor '517 patent and U.S. Patent Pub. No. 2003/0011721 to Wattelet et al. ("the Wattelet '721 publication"). The rejections under 35 U.S.C. §§ 102 and 103 are respectfully traversed with respect to the claims as amended above. Reconsideration thereof is respectfully requested.

B. The Cited References

As illustrated in Figure 1, the Montemayor '517 patent discloses a fuel cell apparatus including a fuel cell with an anode 14 and hydrogen injection tubes 22 and 24 at the longitudinal edges of the anode. The fuel cell is rolled in the manner illustrated in Figure 2 and placed in the casing 30 illustrated in Figure 3. During operation, hydrogen is forced into both longitudinal ends of the anode 14 by way of the hydrogen injection tubes 22 and 24 under sufficient pressure to force the hydrogen through the anode. [Note arrows 34 in Figure 3.] Oxidant is supplied to the rolled fuel cell by way of the gaps adjacent to the

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cathode 26. Additionally, and although it is not entirely clear, it appears that hydrogen which was not forced into the anode 14 exits the apparatus by way of the injection tubes 22 and 24. [Note the arrows at the bottom of Figure 3.]

The Wattelet publication has been cited for its purported heat exchanger teachings.

C. Discussion Concerning 1, 2, 5-13 and 43

Independent claim 1 is directed to a combination of elements comprising "a housing having an outer region and an inner region defining a perimeter" and "at least one fuel cell, including an anode and a cathode, **shaped to define a fuel path in the form of an unobstructed gap adjacent to the anode which extends at least once around the perimeter** of the inner region and has an upstream end associated with the outer region and a downstream end associated with the inner region." The respective combinations defined by claims 2, 5-13 and 43 include, *inter alia*, the elements recited in claim 1.

The Montemayor '517 patent fails to teach or suggest the claimed combinations. For example, there is no fuel path adjacent to the anode 14 in the Montemayor apparatus, let alone a fuel path in the form of an unobstructed gap. Hydrogen is supplied under pressure and forced into, and through, the anode 14. In other words, the Montemayor anode 14 is itself the fuel path.

The Office Action appears to have taken the position that the Montemayor catalyst layer 16 corresponds to the claimed "fuel path" because it is adjacent to the Montemayor anode 14. [Office Action at page 8.] Applicant respectfully submits that this interpretation is unreasonable for at least two reasons. First, it conflicts with the interpretation that one of skill in the art would make after reviewing the present application. More importantly, however, is the fact that the Montemayor patent explicitly states that the anode 14 is, in and of itself, the fuel path. For example, the Montemayor patent states that "[t]he **anode 14** may comprise substantially any flexible conductive material **capable of establishing a linear gaseous flowpath**." [Column 2, lines 43-45.] The Montemayor patent also states that "[t]he **anode 14 serves as a self-supporting hydrogen flowpath**, which abuts inner and outer catalyst layers 16 and 18." [Column 2, lines 47-49.]

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As illustrated above, the Montemayor '517 patent fails to teach or suggest each and every element of the combination recited in independent claim 1. Applicant respectfully submits, therefore, that claims 1, 2, 5-7, 9, 12 and 43 are patentable thereover and that the rejection under 35 U.S.C. § 102 should be withdrawn. Additionally, *in order to clarify the issues on appeal*, applicant hereby requests that the Examiner specifically address column 2, lines 43-49 of the Montemayor patent in any subsequent Office Action.

Turning to claims 8, 11 and 13, applicant respectfully submits that the Montemayor '517 patent also fails to render independent claim 1 obvious and that claims 8, 11 and 13 are patentable over the Montemayor '517 patent for at least the same reasons as independent claim 1. The rejection of claims 8, 11 and 13 under 35 U.S.C. § 103 should, therefore, be withdrawn.

Finally, with respect to claim 10, the Wattelet '721 publication fails to remedy the above-identified deficiencies in the Montemayor '517 patent. Claim 10 is, therefore, patentable for at least the same reasons as independent claim 1 and the rejection of claim 10 under 35 U.S.C. § 103 should also be withdrawn.

D. Discussion Concerning 19 and 21-23

Independent claim 19 is directed to a combination of elements comprising "a housing having an outer region, an inner region defining a perimeter and exhaust port connected to the inner region" and "*means for* converting reactants into electricity and byproducts and directing the reactants and byproducts from the outer region to the inner region, and at least once around the perimeter of the inner region, as the reactants are being converted into electricity and byproducts, such that all of the byproducts and any unused reactants that exit the fuel cell assembly exit by way of the inner region." The respective combinations defined by claims 21-23 include, *inter alia*, the elements recited in claim 19.

The Montemayor '517 patent fails to teach or suggest the claimed combinations. For example, the function recited in the means-plus-function element is not being

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performed because what appears to be unused hydrogen exits the Montemayor apparatus from the **outer region (tube 24)** in addition to the inner region (tube 22).

The outstanding Office Action indicated that "[t]he Office is interpreting the arrow 22 in Fig. 3 as the exhaust region and, thus, meets the limitation of claim 19." [Office Action at page 8.] To that end, applicant notes that claim 19 requires that "**ALL** of the byproducts and **ANY** unused reactants that exit the fuel cell assembly **exit by way of the inner region.**" *In order to clarify the issue for appeal*, applicant hereby requests that the Examiner indicate how the "Office" is interpreting arrow 24 in Figure 3.

As illustrated above, the Montemayor '517 patent fails to teach or suggest each and every element of the combination recited in independent claim 19. Applicant respectfully submits, therefore, that claims 19 and 22 are patentable thereover and that the rejection under 35 U.S.C. § 102 should be withdrawn. As the Montemayor '517 patent also fails to render independent claim 19 obvious, the rejection of dependent claim 23 under 35 U.S.C. § 103 should also be withdrawn.

Turning to claim 21, the Wattelet '721 publication fails to remedy the above-identified deficiencies in the Montemayor '517 patent. Claim 21 is, therefore, patentable for at least the same reasons as independent claim 19 and the rejection of claim 21 under 35 U.S.C. § 103 should also be withdrawn.

IV. PRIOR ART REJECTION OF CLAIMS 14-16 AND 18

A. The Rejection

Claims 14-16 and 18 have been rejected under 35 U.S.C. § 103 as being unpatentable over the combined teachings of U.S. Patent No. 4,910,100 to Nakanishi et al. ("the Nakanishi '100 patent") and the Montemayor '517 patent. The rejection under 35 U.S.C. § 103 is respectfully traversed with respect to the claims as amended above. Reconsideration thereof is respectfully requested.

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B. The Cited References

Referring to Figures 6A and 6B, the Nakanishi '100 patent discloses a fuel cell stack including a plurality of spaced fuel cells 13 with spiral guide vanes 4B therebetween. Fuel and oxidant are supplied to the fuel cells 13 at the inner ends of the guide vanes 4B by the fuel and oxidant manifolds 5 and 6. The fuel and oxidant is discharged at the outer ends of the guide vanes 4B.

The Montemayor '517 patent disclose a fuel cell apparatus including a fuel cell with an anode 14 and hydrogen injection tubes 22 and 24. Hydrogen is forced into the inner and outer ends of the anode 14. [Note arrows 34 in Figure 3.] Although it is not entirely clear, it appears that hydrogen which was not forced into the anode 14 exits the fuel cell apparatus by way of the injection tubes 22 and 24. [Note the arrows at the bottom of Figure 3.]

C. Discussion Concerning Claims 14-16 and 18

Independent claim 14 calls for a combination of elements comprising "an exhaust region defining a perimeter" and "at least one anode and cathode arrangement having a spiral shape that **extends outwardly of and more than once around the perimeter of the exhaust region** and defines a reactant path having an **outlet end associated with the exhaust region** and an inlet end." The respective combinations defined by claims 15, 16 and 18 include, *inter alia*, the elements recited in claim 14.

The cited references fail to teach or suggest the claimed combinations. For example, the fuel and oxidant **enters** the spiral guide vanes 4B (from the manifolds 5 and 6) **in the center** of the Nakanishi fuel cell stack and **exits at the outermost edge**. As such, even assuming for the sake of argument that there was some reason to substitute the Montemayor spiral fuel cell for the fuel Nakanishi fuel cells 13 and guide vanes 4B, the spirally shaped fuel cell would not extend "outwardly of and more than once around the perimeter of the exhaust region." The purportedly obvious spirally shaped fuel cell would, to the contrary, extend more than once about the **reactant inlet region** (i.e. the fuel and oxidant manifolds 5 and 6).

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Faced with this clear difference between the Nakanishi/Montemayor fuel cell and the claimed combinations, the Office Action asserted that “the exhaust region [is] the outermost periphery of the spiral assembly” and that “it would have been obvious to configure the gas flow stream flowing from the outer periphery to the center.” [Office Action at page 9.] The Office Action also cited *In re Japikse*, 86 USPQ 70 (CCPA 1950), in support of these assertions. To that end, applicant respectfully notes that MPEP § 2144.04-VI-C (which is the portion of the MPEP that cites the *Japikse* decision) indicates that (1) the modification of prior art switch position in *Japikse* **did not change the operation** of the device and (2) “the **prior art must provide a motivation** or reason for the worker in the art, **without the benefit of appellant’s specification**, to make the necessary changes in the reference device.” Citation omitted, emphasis added. With respect to “change of operation,” the present specification explicitly describes the beneficial operational differences obtained by the claimed outlet/exhaust region locations. [Specification at, for example, page 5, lines 14-20.] Thus, the purportedly obvious modification would, in fact, change the operation of the Nakanishi/Montemayor fuel cell. Turning to motivation, the Office Action failed identify anything in the prior art that would have led one of skill in the art to the purportedly obvious modification of the Nakanishi/Montemayor fuel cell.

In view of the foregoing, application respectfully submits that the Nakanishi and Montemayor patents fail to establish a *prima facie* case of obviousness of independent claim 14 and that the rejection of claims 14-16 and 18 under 35 U.S.C. § 103 should be withdrawn.

V. CLOSING REMARKS

In view of the foregoing, it is respectfully submitted that the claims in the application are in condition for allowance. Reexamination and reconsideration of the application, as amended, are respectfully requested. Allowance of the claims at an early date is courteously solicited.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is respectfully requested to call applicant’s undersigned

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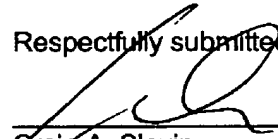
representative at (310) 563-1458 to discuss the steps necessary for placing the application in condition for allowance.

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 08-2025. Should such fees be associated with an extension of time, applicant respectfully requests that this paper be considered a petition therefor.

6/13/06
Date

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Respectfully submitted,



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